

CLAIMS

We claim:

- 5 1. A polymer composition comprising a blend
of a first biodegradable polymer grafted with a polar monomer,
oligomer, or polymer or a combination thereof and a second
biodegradable polymer grafted with a polar monomer,
oligomer, or polymer or a combination thereof, wherein said
10 first and second biodegradable polymers are different polymers.
- 15 2. The composition of Claim 1, wherein said
first biodegradable polymer comprises about 1% to 99% by
weight of said polymer blend and second biodegradable
polymer comprises about 1% to 99% by weight of said
polymer blend.
- 20 3. The composition of Claim 1, wherein said
first biodegradable polymer comprises a polylactide.
- 25 4. The composition of Claim 1, wherein said
first biodegradable polymer comprises a poly(ethylene oxide).
- 30 5. The composition of Claim 1, wherein said
second biodegradable polymer comprises a poly(hydroxy
alkanoate).
- 30 6. The composition of Claim 4, wherein said
poly(hydroxy alkanoate) is poly(β -hydroxybutyrate-co- β -
hydroxyvalerate).

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7. The polymer composition of Claim 1,
wherein said polar monomer is an ethylenically unsaturated
monomer containing at least one polar functional group or said
oligomer or said polymer is an oligomer or a polymer
polymerized from an ethylenically unsaturated monomer
containing at least one polar functional group.

10 8. The polymer composition of Claim 6, wherein said at least one polar functional group is a hydroxyl, carboxyl, sulfonate, halide, glycidyl, cyano, carbonyl, thiol, sulfonic groups or a combination thereof.

9. The polymer composition of Claim 6, wherein said at least one polar functional group is a hydroxyl group.

10. The polymer composition of Claim 1, wherein said polar monomer is a polar vinyl monomer.

20 11. The polymer composition of Claim 1,
wherein said polar monomer is selected from poly(ethylene
glycol) acrylate, poly(ethylene glycol) alkyl ether acrylate,
poly(ethylene glycol) methacrylate, poly(ethylene glycol) alkyl
ether methacrylate, acrylic acid, maleic anhydride, itaconic
acid, sodium acrylate, 3-hydroxypropyl methacrylate, 2-
hydroxyethyl methacrylate, 3-hydroxypropyl acrylate, 2-
hydroxyethyl acrylate, acrylamide, 2-bromoethyl methacrylate,
2-chloroethyl methacrylate, 2-iodoethyl methacrylate, 2-
bromoethyl acrylate, 2-chloroethyl acrylate, 2-iodoethyl
acrylate, glycidyl methacrylate, 2-acrylate, 2-cyanoethyl
acrylate, glycidyl acrylate, 4-nitrophenyl acrylate,
pentabromophenyl acrylate, poly(propylene glycol)
methacrylate, poly(propylene glycol) acrylate, 2-propene-1-
sulfonic acid and its sodium salt, 2-sulfoethyl acrylate, 2-

sulfoethyl methacrylate, 3-sulfopropyl acrylate, 3-sulfopropyl methacrylate or mixtures thereof.

5 12. The polymer composition of Claim 1,
wherein said polar monomer, oligomer, or polymer is selected
from 2-hydroxyethyl methacrylate, polyethylene glycol
methacrylate or analogs thereof.

10 13. The polymer composition of Claim 1,
wherein said polar monomer, oligomer, or polymer is selected
from hydroxyalkyl acrylate or hydroxyalkyl methacrylate.

15 14. The polymer composition of Claim 10,
wherein said polar vinyl monomer is hydroxyalkyl acrylate or
hydroxyalkyl methacrylate .

20 15. The polymer composition of Claim 10,
wherein said polar vinyl monomer is 2-hydroxyethyl
methacrylate or its analogs.

25 16. A polymer composition comprising a blend
of a polylactide grafted with 2-hydroxyethyl methacrylate or its
analogs and poly(β -hydroxybutyrate-co- β -hydroxyvalerate)
grafted with 2-hydroxyethyl methacrylate or its analogs.

30 17. A polymer composition comprising a blend
of a poly(ethylene oxide) grafted with 2-hydroxyethyl
methacrylate or its analogs and poly(β -hydroxybutyrate-co- β -
hydroxyvalerate) grafted with 2-hydroxyethyl methacrylate or
its derivatives.

18. A film comprising the composition of Claim
1.

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19. A fiber comprising the composition of
Claim 1.

5 20. An article comprising the composition of
Claim 1.

10 21. A polymer composition comprising a blend
of two or more different biodegradable polymers grafted with
polyethyleneglycol methacrylate or 2-hydroxyethyl
methacrylate or their analogs.

15 22. A film comprising the composition of Claim
21.

20 23. A fiber comprising the composition of
Claim 21.

25 24. An article comprising the composition of
Claim 21.

20 25. The composition of Claim 1, wherein said
composition has improved processability.

25 26. The composition of Claim 1, wherein said
composition has improved mechanical properties.

30 27. The composition of Claim 1, wherein said
composition has improved cooling properties and an increased
solidification rate.

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